

CPC**COOPERATIVE PATENT CLASSIFICATION****C25D****PROCESSES FOR THE ELECTROLYTIC OR ELECTROPHORETIC PRODUCTION OF COATINGS; ELECTROFORMING** (decorating textiles by metallising [D06Q 1/04](#); manufacturing printed circuits by metal deposition [H05K 3/18](#)); **APPARATUS THEREFOR****WARNING**

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups :[C25D 5/24](#) covered by [C25D 5/34](#) [C25D 5/26](#) covered by [C25D 5/36](#) [C25D 5/28](#) covered by [C25D 5/38](#) [C25D 5/30](#) covered by [C25D 5/42](#), [C25D 5/44](#) [C25D 5/32](#) covered by [C25D 5/46](#) [C25D 13/06](#) covered by [C09D 5/44](#) [C25D 13/08](#) covered by [C09D 5/4476](#) [C25D 13/10](#) covered by [C09D 5/448](#) [C25D 19/00](#) covered by [C25D 17/00](#)

C25D 1/00**Electroforming**

- C25D 1/003 . { 3D structures, e.g. superposed patterned layers}
- C25D 1/006 . { Nanostructures, e.g. aluminum anodic oxidation templates [AAO]}
- C25D 1/02 . Tubes; Rings; Hollow bodies
- C25D 1/04 . Wires; Strips; Foils
- C25D 1/06 . Wholly-metallic mirrors
- C25D 1/08 . Perforated or foraminous objects, e.g. sieves ([C25D 1/10](#) takes precedence)
- C25D 1/10 . Moulds; Masks; Masterforms {, e.g. mandrels, stampers}
- C25D 1/12 . by electrophoresis {(electrophoretic coating [C25D 13/00](#))}
- C25D 1/14 . . . of inorganic material
- C25D 1/16 Metals
- C25D 1/18 . . . of organic material
- C25D 1/20 . Separation of the formed objects from the electrodes { with no destruction of said electrodes}
- C25D 1/22 . . . Separating compounds

C25D 3/00**Electroplating: Baths therefor**

- C25D 3/02 . from solutions ([C25D 5/24](#) to [C25D 5/32](#) take precedence)
- C25D 3/04 . . . of chromium

- C25D 3/06 . . . from solutions of trivalent chromium
- C25D 3/08 . . . Deposition of black chromium { , e.g. hexavalent chromium, CrVI}
- C25D 3/10 . . . characterised by the organic bath constituents used
- C25D 3/12 . . of nickel or cobalt {(C25D 3/56 takes precedence)}
- C25D 3/14 . . . from baths containing acetylenic or heterocyclic compounds
- C25D 3/16 Acetylenic compounds
- C25D 3/18 Heterocyclic compounds
- C25D 3/20 . . of iron
- C25D 3/22 . . of zinc
- C25D 3/24 . . . from cyanide baths
- C25D 3/26 . . of cadmium
- C25D 3/28 . . . from cyanide baths
- C25D 3/30 . . of tin
- C25D 3/32 . . . characterised by the organic bath constituents used
- C25D 3/34 . . of lead
- C25D 3/36 . . . characterised by the organic bath constituents used
- C25D 3/38 . . of copper
- C25D 3/40 . . . from cyanide baths { , e.g. with Cu+}
- C25D 3/42 . . of light metals
- C25D 3/44 . . . Aluminium
- C25D 3/46 . . of silver
- C25D 3/48 . . of gold
- C25D 3/50 . . of platinum group metals
- C25D 3/52 . . . characterised by the organic bath constituents used
- C25D 3/54 . . of metals not provided for in groups [C25D 3/04](#) to [C25D 3/50](#)
- C25D 3/56 . . of alloys
- C25D 3/562 . . . { containing more than 50% by weight of iron or nickel or cobalt { ; NiP, FeP, CoP (Phosphatising [C25D 11/36](#)) }
- C25D 3/565 . . . {containing more than 50% by weight of zinc}
- C25D 3/567 . . . {containing more than 50% by weight of platinum group metals}
- C25D 3/58 . . . containing more than 50% by weight of copper
- C25D 3/60 . . . containing more than 50% by weight of of tin { ; SnP}
- C25D 3/62 . . . containing more than 50% by weight of gold
- C25D 3/64 . . . containing more than 50% by weight of silver

- C25D 3/66 . from melts
- C25D 3/665 . . { from ionic liquids}

WARNING

Group [C25D 3/665](#) is not complete, pending reorganization, see also [C25D 3/66](#)

C25D 5/00**Electroplating characterised by the process; Pretreatment or after-treatment of work-pieces**

C25D 5/003

- . { Electroplating characterised by the use of gases, e.g. pressure influence (removal or gases or vapours, [C25D 21/04](#))}

WARNING

Groups [C25D 5/00B](#), [C25D 5/006](#) are not complete, pending reorganization, see also [C25D 5/00](#)

C25D 5/006

- . { Electroplating with applied electromagnetic field, not locally , e.g. for plating magnetic layers}

C25D 5/02

- . Electroplating of selected surface areas

C25D 5/022

- .. { using masking means {([C25D 11/022](#) takes precedence)}

C25D 5/024

- .. {using locally applied electromagnetic radiation e.g. lasers}

C25D 5/026

- .. {using locally applied jets of electrolyte}

C25D 5/028

- .. { one side electroplating {, e.g. substrate conveyed in a bath with inhibited background plating}}

C25D 5/04

- . Electroplating with moving electrodes

C25D 5/06

- .. Brush or pad plating {(electrodes for pad plating [C25D 17/14](#))}

C25D 5/08

- . Electroplating with moving electrolyte {, characterised by electrolyte flow}, e.g. jet electroplating {(spraying of electrolyte on wires strip or foils [C25D 7/0642](#), means or devices for moving the electrolyte [C25D 21/10](#), [C25D 5/026](#) takes precedence)}

C25D 5/10

- . Electroplating with more than one layer of the same or of different metals (for bearings [C25D 7/10](#))

C25D 5/12

- .. at least one layer being of nickel or chromium

C25D 5/14

- ... two or more layers being of nickel or chromium, e.g. duplex or triplex layers

C25D 5/16

- . Electroplating with layers of varying thickness {, e.g. rough surfaces}{ ; Hull cells}

C25D 5/18

- . Electroplating using modulated, pulsed or reversing current

C25D 5/20

- . Electroplating using ultrasonics { , vibrations}

C25D 5/22

- . Electroplating combined with mechanical treatment during the deposition

C25D 5/34

- . Pretreatment of metallic surfaces to be electroplated

C25D 5/36

- .. of iron or steel

C25D 5/38

- .. of refractory metals or nickel

C25D 5/40

- ... Nickel; Chromium

C25D 5/42

- .. of light metals

C25D 5/44

- ... Aluminium

C25D 5/46

- .. of actinides

- C25D 5/48 . After-treatment of electroplated surfaces
- C25D 5/50 .. by heat-treatment
- C25D 5/505 ... {of electroplated tin coatings, e.g. by melting}
- C25D 5/52 .. by brightening or burnishing

- C25D 5/54 . Electroplating {on } non-metallic surfaces { ,e.g. on carbon or carbon composites}(C25D 7/12 takes precedence)
- C25D 5/56 .. on { thin or conductive} plastics {(coating metallic material C23C)}

C25D 7/00 Electroplating characterised by the article coated

- C25D 7/001 . { Magnets}

WARNING

Groups [C25D 7/00B-C25D 7/008](#) are not complete, pending reorganization, see also [C25D 7/00](#)

- C25D 7/003 . { Threaded pieces, e.g. bolts, nuts}
- C25D 7/005 . { Jewels or clockworks}
- C25D 7/006 . { Nanoparticles}
- C25D 7/008 . { Thermal barrier coatings}
- C25D 7/02 . Slide fasteners
- C25D 7/04 . Tubes; Rings; Hollow bodies
- C25D 7/06 . Wires; Strips; Foils
- C25D 7/0607 .. {Wires}
- C25D 7/0614 .. {Strips or foils}
- C25D 7/0621 ... {In horizontal cells}
- C25D 7/0628 ... {In vertical cells}
- C25D 7/0635 ... {In radial cells}
- C25D 7/0642 ... {Anodes}
- C25D 7/065 ... {Diaphragms}
- C25D 7/0657 ... {Conducting rolls}
- C25D 7/0664 ... {Isolating rolls}
- C25D 7/0671 ... {Selective plating}
- C25D 7/0678 {using masks}
- C25D 7/0685 ... {Spraying of electrolyte}
- C25D 7/0692 ... {Regulating the thickness of the coating}

- C25D 7/08 . Mirrors; Reflectors

- C25D 7/10 . Bearings
- C25D 7/12 . Semiconductors { without seed layer}
- C25D 7/123 .. { Semiconductors first coated with a seed layer for filling vias}

WARNING

Groups [C25D 7/12B](#)-[C25D 7/126](#) are not complete, pending reorganization, see also [C25D 7/12](#)

- C25D 7/126 .. { Semiconductors first coated with a seed layer for solar cells}

C25D 9/00 Electrolytic coating other than with metals ([C25D 11/00](#), [C25D 15/00](#) take precedence; electrophoretic coating [C25D 13/00](#))

- C25D 9/02 . with organic materials
- C25D 9/04 . with inorganic materials
- C25D 9/06 .. by anodic processes
- C25D 9/08 .. by cathodic processes
- C25D 9/10 ... on iron or steel
- C25D 9/12 ... on light metals

C25D 11/00 Electrolytic coating by surface reaction, i.e. forming conversion layers

- C25D 11/005 . { Apparatus specially adapted for electrolytic conversion coating (apparatus in general for electrolytic coating [C25D 17/00](#))}

WARNING

Groups **C25B 11/00B**, [C25D 11/022](#)-[C25D 11/02F](#), [C25D 11/045](#) are not complete, pending reorganization, see also [C25D 11/00](#)

- C25D 11/02 . Anodisation
- C25D 11/022 .. { Anodisation on selected surface areas}
- C25D 11/024 .. {Anodisation under pulsed or modulated current or potential}
- C25D 11/026 .. { Anodisation with spark discharge [ANOF]}
- C25D 11/028 .. { Borodising,, i.e. borides formed electrochemically}
- C25D 11/04 .. of aluminium or alloys based thereon
- C25D 11/045 ... { for forming AAO templates}
- C25D 11/06 ... characterised by the electrolytes used
- C25D 11/08 containing inorganic acids
- C25D 11/10 containing organic acids
- C25D 11/12 ... Anodising more than once, e.g. in different baths
- C25D 11/14 ... Producing integrally coloured layers
- C25D 11/16 ... Pretreatment {, e.g. desmutting}

- C25D 11/18 . . . After-treatment, e.g. pore sealing ([lacquering B44D](#))
- C25D 11/20 Electrolytic after-treatment
- C25D 11/22 for colouring layers
- C25D 11/24 Chemical after-treatment
- C25D 11/243 {using organic dyestuffs}
- C25D 11/246 {for sealing layers}
- C25D 11/26 . . of refractory metals or alloys based thereon
- C25D 11/28 . . of actinides or alloys based thereon
- C25D 11/30 . . of magnesium or alloys based thereon
- C25D 11/32 . . of semiconducting materials
- C25D 11/34 . . of metals or alloys not provided for in groups [C25D 11/04](#) to [C25D 11/32](#)

- C25D 11/36 . Phosphatising {, e.g. NiP, CoP, FeP (bath solutions of NiP, CoP, FeP [C25D 3/562](#))}
- C25D 11/38 . Chromatising

- C25D 13/00** **Electrophoretic coating** ([C25D 15/00](#) takes precedence; apparatus for continuously conveying articles into baths [B65G](#), e.g. [B65G 49/00](#))

- C25D 13/02 . with inorganic material
- C25D 13/04 . with organic material
- C25D 13/06 . . with polymers {not used, see [C09D 5/44](#)}
- C25D 13/08 . . . by polymerisation in situ of monomeric materials {not used, see [C09D 5/4476](#)}

- C25D 13/10 . characterised by the additives used {not used, see [C09D 5/448](#)}

- C25D 13/12 . characterised by the article coated
- C25D 13/14 . . Tubes; Rings; Hollow bodies
- C25D 13/16 . . Wires; Strips; Foils

- C25D 13/18 . using modulated, pulsed, or reversing current

- C25D 13/20 . Pre-treatment

- C25D 13/22 . Servicing or operating { apparatus or multistep processes}
- C25D 13/24 . . Regeneration of process liquids

- C25D 15/00** **Electrolytic or electrophoretic production of coatings containing { uncharged} embedded materials, e.g. particles, whiskers, wires**

- C25D 15/02 . Combined electrolytic and electrophoretic processes { with charged materials}

- C25D 17/00** **Constructional parts, or assemblies thereof, of cells for electrolytic coating** (apparatus for continuously conveying articles into baths [B65G](#), e.g. [B65G 49/00](#); electric devices see the relevant classes, e.g. H01B, H02G){([C25D 7/06](#), [C25D 11/42](#),

[C25D 13/22](#), C25 takes precedence)}

- C25D 17/001 . { Apparatus specially adapted for plating wafers, e.g. semiconductors, solar cells}
- WARNING**
- Groups **C25B 17/00B**-[C25D 17/008](#) are not complete, pending reorganization, see also [C25D 17/00](#)
- C25D 17/002 . { Cell separation, e.g. membranes, diaphragms}
- C25D 17/004 . { Sealing devices}
- C25D 17/005 . { Contacting devices}
- C25D 17/007 . { Current conducting devices}
- C25D 17/008 . { Current insulating devices}
- C25D 17/02 . Tanks; Installations therefor
- C25D 17/04 . . External supporting frames or structures
- C25D 17/06 . Suspending or supporting devices for articles to be coated
- C25D 17/08 . . { Supporting} racks{ i.e. not for suspending}
- C25D 17/10 . Electrodes { e.g. composition, counter electrode}
- C25D 17/12 . . Shape or form ([C25D 17/14](#) takes precedence)
- C25D 17/14 . . for pad-plating
- C25D 17/16 . Apparatus for electrolytic coating of small objects in bulk
- C25D 17/18 . . having closed containers
- C25D 17/20 . . . Horizontal barrels
- C25D 17/22 . . having open containers
- C25D 17/24 . . . Oblique barrels
- C25D 17/26 . . . Oscillating baskets
- C25D 17/28 . . with means for moving the objects individually through the apparatus during treatment
- C25D 21/00 Processes for servicing or operating cells for electrolytic coating**
- C25D 21/02 . Heating or cooling
- C25D 21/04 . Removal of gases or vapours {; gas or pressure control (electroplating characterized by the use of gases [C25D 5/003](#))}
- C25D 21/06 . Filtering { particles other than ions (filtering ions [C25D 21/22](#))}

- C25D 21/08 . Rinsing
- C25D 21/10 . Agitating of electrolytes; Moving of racks
- C25D 21/11 . Use of protective surface layers on electrolytic baths
- C25D 21/12 . Process control or regulation ([controlling or regulating in general G05](#))
- C25D 21/14 .. Controlled addition of electrolyte components
- C25D 21/16 . Regeneration of process solutions [{\(C25D 13/24 takes precedence\)}](#)
- C25D 21/18 .. of electrolytes ([C25D 21/22 takes precedence](#))
- C25D 21/20 .. of rinse-solutions ([C25D 21/22 takes precedence](#))
- C25D 21/22 .. by ion-exchange